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U. S. Application No. 10/518,886
Attorney Docket No. 2002B096/2
Reply to Final Rejection dated March 5, 2007
Amendment/Response dated May 30, 2007

REMARKS

This reply is in response to the Final Office Action dated March 5, 2007. By this amendment, independent claims 1, 24 and 48 are amended to recite the features of dependent claims 6, 9, 10, 13, 20, 21, 22, 25, 43, and/or 46, which have been canceled. Claim 12 is also amended to cancel species from the Markush group other than natural rubber. No new issues or new matter are raised. The amendment places the claims in condition for allowance and/or better form for appeal, and thus entry after final rejection is respectfully requested.

Claims 1-5, 11, 14-19, 23, 24, 26-33, 35-42, 44, 45 and 47-52 are before the examiner and stand finally rejected under 35 U.S.C. § 102(a or e), § 103(a) and for obviousness type double patenting in view of Tsou et al. (either US 6,875,813 or WO 200157340) hereafter "Tsou." Reconsideration of the rejections in view of the amendment is respectfully requested.

All pending claims now specify the composition has a Shore A Hardness at 25°C of less than 50 and an Adhesion to Carcass value of greater than 4 N/mm. Claim 1 is also amended to specify the proportions of polybutene processing oil and plastomer, as well as to specify 5-30 phr of a secondary blend rubber, whereas claim 24 is additionally amended to specify the proportion of α-olefin derived units in the plastomer is 10-30 wt%.

Tsou fails to anticipate the specific combination of components and properties recited in the claims, namely an isoolefin elastomer, polybutene processing oil, ethylene/α-olefin plastomer, and secondary blend rubber. Moreover, Tsou clearly does not anticipate the specific combination of components, selected for their properties and in the proper proportions, to obtain the specified brittleness value, hardness, air permeability and adhesion characteristics. The data in the specification (see Tables 4, 5 and 6) demonstrate that these specified characteristics are not inherent from the Tsou disclosure as several comparative compositions containing the EXACT 8201 plastomer do not have the combination of characteristics specified. In this regard note examples 2-4 in the specification meet the generic disclosure of Tsou but, unlike example 5, fail to meet all of the specified component combination and brittleness/hardness/adhesion characteristics of the present claims.

To anticipate the claims, a single prior art reference must disclose every recited element. It is not enough that the reference might have by chance inherently obtained the claimed composition under certain circumstances; rather, the claimed composition must necessarily be obtained by the reference.

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Tsou fails to specifically disclose elastomer/plastomer/oil/blend rubber compositions that exclude greater than 0.2 wt% naphthenic/aromatic oils and have the brittleness/hardness/adhesion characteristics (claim 1); fails to specifically disclose air barrier compositions consisting essentially of elastomer, plastomer and polybutene oil (claim 24); and fails to disclose the specific formulation of 5-25 phr polybutene oil, halogenated star-branched butyl rubber, 5-25 phr natural rubber and 5-25 phr plastomer (claim 48). Respectfully, Tsou does not fully anticipate any of the pending independent claims, and the 102 rejection should be withdrawn.

The purported modification of Tsou to somehow extract the specific combination of components and properties clearly involves impermissible hindsight reconstruction, using applicant's own disclosure to selectively pick and choose the claimed species of combination from an extremely broad genus of possible combinations. Applicant respectfully traverses the obviousness rejection based on Tsou. Tsou does not teach, show, or suggest a composition suitable for an air barrier consisting essentially of an elastomer, processing oil, plastomer and secondary blend rubber which can be a natural rubber, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α-olefin derived units, has a density of less than 0.915 g/cm³, a brittleness value of less than -41.0°C, a Shore A Hardness at 25°C of less than 50 and an Adhesion to Carcass value of greater than 4 N/mm, wherein naphthenic and aromatic processing oils are substantially absent from the composition, as recited in claim 1 and those dependent therefrom. Similar distinguishing limitations are seen in the specific parameters of claims 24 and 48.

Indeed, Tsou teaches explicitly at (column/line in US6875813) 11/53-55 that the oil level should be reduced in order to improve air impermeability in air barrier applications, recognizing that there is a trade off between processability/plasticization on the one hand (more oil) and air impermeability on the other (more oil is undesirably more permeable). Tsou reiterates the prior art understanding that oils, as well as plastomers and natural rubber, all tend to adversely impact air impermeability. All of the Tsou data in the examples are based on paraffinic processing oil. Column 6, line 56 through column 7, line 5, makes clear that Tsou teaches replacement of some of the processing oil using the plastomer instead, and that the barrier improvement comes from using less oil as a result, not more. Polybutene is at best indicated in Tsou to be equivalent to FLEXON 876, and no guidance is provided as to how much of the FLEXON 876 should be replaced, e.g. partially or entirely. Tsou provides no suggestion that increased polybutene or any other processing oil would favorably reduce permeability; to the contrary, Tsou explicitly teaches away by stating that oils are generically adverse to permeability and improvements are

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to be obtained by eliminated or reducing its use, not by using it to improve (reduce) permeability. See column 6, lines 58-63.

Comparing the data in Table 5 of Tsou, the air permeability is worse (increased) when natural rubber is added (sample blend 2) and when plastomer is added (sample blends 3-6) to a stock blend based on paraffinic processing oil. See also column 1, lines 42-46. This clearly teaches away from applicant's claims 12 and 48.

Applicant unexpectedly discovered that the widespread understanding in the art was incorrect when employing a combination of plastomer with processing oils that are not aromatic or naphthenic, in a butyl type rubber that can even also include a natural rubber blend component (see claims 1, 12, 35-36 and 48 for the unexpected ability to include natural rubber, compare Tsou sample blend 2). In Table 6 in the specification, the combination of NR/polyisobutylene/EXACT plastomer/PARAPOL polybutene oil in composition 5 is dramatically and quite unexpectedly reduced compared to the plastomer alone (compositions 3 and 4) and the plastomer/naphthenic oil combination (composition 2).

The assertion in the office action that the expectation of improved processability alone would provide motivation for the alleged modification of Tsou is contrary to the record. The art recognized that commercial applicability requires that the cured elastomer have desirable properties as well as processability. One would not be lead to improve processability alone where the end properties (air permeability) are clearly expected to be worse. Tsou teaches away from the discovery of applicant and thus provides no motivation for the modification asserted, nor a reasonable expectation of success. Even if it did, applicant's data clearly demonstrate the unexpected nature of the properties of the claimed composition. Accordingly, withdrawal of the 103 rejection over Tsou is respectfully requested.

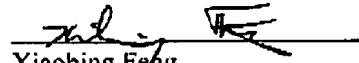
The claims were also rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 of Tsou. For reasons discussed above, Tsou does not teach, show or suggest the claimed invention as amended and therefore, none of applicant's claims are anticipated by or obvious over the claims of Tsou. Accordingly, a rejection on the grounds of nonstatutory obviousness-type double patenting should be withdrawn. Entry of the amendment, withdrawal of the rejection and allowance of the claims are respectfully requested.

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Having addressed all issues set out in the office action, Applicant respectfully submits that the pending claims are now in condition for allowance. Applicant invites the Office Action to telephone the undersigned attorney if there are any issues outstanding which have not been addressed to the Office Action's satisfaction. It is believed this response is timely filed and additional claim fees are due; however, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 05-1712, for any fees, including extension of time fees or excess claim fees, required to make this response timely and acceptable to the Office.

Respectfully submitted,

May 30, 2007
Date


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